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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,416	04/19/2002	Joshua R. Smith	103140-0007U	2467
7590 02/25/2005			EXAMINER	
Cesari and McKenna 88 Black Falcon Avenue Boston, MA 02210			SHIFERAW, ELENI A	
			ART UNIT	PAPER NUMBER
			2136	

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/018,416

Applicant(s)

SMITH, JOSHUA R.

Examiner

Eleni A Shiferaw

Art Unit

2136

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/14/01</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1-45 are presented for examination.

#### *Drawings*

2. The drawings are objected to because Fig. 1 and 2 No. 16, 20, and 22, Fig. 3 No. 16, 20, 104, 106, 109, and 111, Fig. 4 No. 16, 20, and 106, and Fig. 6 No. 400 and 402 are missing legend. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

#### *Specification*

The disclosure is objected to because of the following informalities: on page 11 line 21 "Figure 4, apparatus 50" should be corrected as Figure 2, apparatus 50.

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 9, 12, 16-19, 24, 27, 31-34, 39, and 42-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimisu et al. (Shimisu, Patent Number: 6,005,936).

As per claim 1, 16, and 31, Shimisu teaches a method/apparatus/computer-readable memory for use in encoding data in an image, comprising:

manipulating one or more pixels in a first portion of the image in accordance with a first function to be used in encoding the data (Shimisu Col. 2 lines 41-66 and col. 4 lines 3-col. 5 lines 4; one or more pixels are manipulated in a first region D1 in accordance with a first hash function H to be used in encoding the data); and

encoding the data in a second portion of the image by manipulating one or more pixels in the second portion in accordance with the first function and tile data (Shimisu Col. 2 lines 41-66 and col. 4 lines 3-col. 5 lines 4; encoding the data in a second region D2 of the image by manipulating one or more pixels in the second region in accordance with the first hash function H and data is embedded).

As per claims 9, 24, and 39, Shimisu teaches method/apparatus/computer-readable memory for use in decoding data encoded in a first portion of an image, comprising:

decoding the data (Shimisu Fig. 4 No. 44) from the first portion based at least in part upon respective correlations and anti-correlations between corresponding regions in the portion and a second portion of the image, pixels in the regions in the second portion having been manipulated in accordance with one or more respective functions and the pixels in the corresponding regions in the first portion having been manipulated in accordance with

the one or more respective functions and the data to encode the data in the first portion (Shimisu Col. 5 lines 53-col. 6 lines 16, col. 4 lines 3-col. 5 lines 4, and col. 7 lines 6-8).

As per claims 2, 12, 17, 27, 32, and 42, Shimisu teaches method/apparatus/computer-readable memory, wherein the first function describes a bitwise modulation to be applied to the data (Shimisu col. 7 lines 6-14).

As per claims 3, 18, 33 and 43, Shimisu teaches method/apparatus/computer-readable memory, wherein the first and second portions each comprise respective respectively-selected disjoint sets of pixels in the image (Shimisu col. 4 lines 3-43).

As per claims 4, 19, and 34, Shimisu teaches method/apparatus/computer-readable memory, wherein the encoding of the data in the image is such that the data may be decoded from the image based at least in part upon respective correlations and anti-correlations between pixel regions in the first and second portions (Shimisu Col. 5 lines 53-col. 6 lines 16, col. 4 lines 3-col. 5 lines 4, and col. 7 lines 6-8).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-8, 10-11, 13-15, 20-23, 25-26, 28-30, 35-38, 40-41, 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimisu et al. (Shimisu, Patent Number: 6,005,936) in view of Cass et al. (Cass, Patent Number: 6,141,441).

As per claims 5, and 20, Shimisu discloses method/apparatus/computer-readable memory for use in encoding data in a first image (Shimisu col. 4 lines 3-col. 5 lines 5), comprising:

Encoding data (Shimisu col. 2 lines 41-66 and col. 4 lines 3-col. 5 lines 5),

Shimisu does not explicitly teach upsampling the first image in at least one dimension of the first image to generate an upsampled image of higher resolution,

However Cass discloses upsampling the first image in at least one dimension of the first image to generate an upsampled image of higher resolution than the first image, the upsampled image including a plurality of respective groups of respectively identical pixels in the direction of the at least one dimension (Cass col. 14 lines 52-col. 15 lines 31); and

encoding the data in the upsampled image to produce an encoded upsampled image in which interference of the first image with the encoded data is eliminated (Cass col. 14 lines 52-col. 15 lines 31).

Therefore it would be obvious to one having ordinary skill in the art at the time of the invention was made to employ the teachings of Cass within the system of Shimisu because it would allow a higher quality and resolution (Cass col. 14 lines 52-col. 15 lines 31).

As to claim 35, it has similar limitations as claim 1; therefore, it is being rejected under the same rationale over Shimisu. In addition, Shimisu teaches:

encoding the data in the upsampled image to produce an encoded upsampled image in which the first image does not interfere with the encoded data do not interfere (Cass col. 14 lines 52-col. 15 lines 31).

As per claims 10, 25, and 40, Shimisu teaches method/apparatus/computer-readable memory for use in decoding data encoded in a first image (Shimisu Fig. 4), comprising:

determining from first groups of pixels in the first image respective bits of the data encoded in the first image, the first image having been generated from a second image (Shimisu, col. 5 lines 3-col. 5 lines 4 and col. 5 lines 53-col. 6 lines 16),

Shimisu does not explicitly teach a second image generated by upsampling a third image in at least one dimension such that the second image has a higher resolution than the third image.

However Cass discloses a second image generated by upsampling a third image in at least one dimension such that the second image has a higher resolution than the third image and includes second groups of respectively identical pixels in the direction of the at least one dimension, with the second groups corresponding to the first groups of pixels and the first image includes the data therein such that interference of the third image and the encoded data is eliminated (Cass col. 14 lines 52-col. 15 lines 31).

Therefore it would be obvious to one having ordinary skill in the art at the time of the invention was made to employ the teachings of Cass within the system of Shimisu because it would allow a higher quality and resolution (Cass col. 14 lines 52-col. 15 lines 31).

As per claims 6 and 36, both Shimisu and Cass teach all the subject matter as described above. In addition Cass teaches method/computer-readable memory, wherein in each of the groups of respectively identical pixels the pixel intensity value of at least one pixel remains the same after the data has been encoded in the upsampled image (Cass Fig. 6, and col. 15 lines 9-31; carrier image I and I').

As per claims 7, 22 and 37, both Shimisu and Cass teach all the subject matter as described above. In addition Cass teaches method/apparatus, wherein the encoding of the data in the upsampled image is bitwise at least in part upon a bitwise modulation of the data (Cass col. 26 lines 36-51 and col. 15 lines 9-31).

As per claims 8, 23, and 38, both Shimisu and Cass teach all the subject matter as described above. In addition Cass teaches method/apparatus/computer-readable memory, wherein the respective identical pixels in each said respective group are changed as a result of the encoding of the data in the upsampled image such that after the encoding, respective summations of respective intensity values of the respective pixels in each said respective group are equal to



respective intensity values of respective corresponding pixels in the first image (Cass Fig. 6, and col. 15 lines 9-31).

As per claims 11, 26, and 41, both Shimisu and Cass teach all the subject matter as described above. In addition Cass teaches method/apparatus/computer-readable memory, wherein the determining of the respective bits is based at least in part upon a subtraction of an intensity value of a respective predetermined pixel in each of the respective first groups of pixels from the intensity values of the other pixels in the same group the respective predetermined pixels in each of the first groups of pixels having the same intensity values as the respective pixels in the corresponding second groups of pixels (Cass Fig. 6, and col. 15 lines 9-31).

As per claims 13 and 28, both Shimisu and Cass teach all the subject matter as described above. In addition Shimisu teaches method/apparatus, wherein the first and second portions each comprise respective arbitrarily-selected disjoint sets of pixels in the image (Shimisu col. 4 lines 3-43).

As per claims 14, 29, and 44, both Shimisu and Cass teach all the subject matter as described above. In addition Shimisu teaches method/apparatus/computer-readable memory, wherein the encoding of the data in the first image is based at least in part upon a bitwise modulation of the data (Shimisu col. 7 lines 6-14 and col. 4 lines 3-43).

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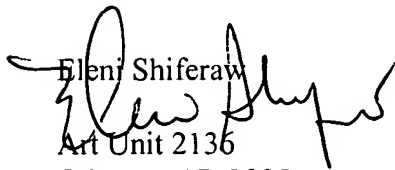
As per claims 15, 30, and 45, both Shimisu and Cass teach all the subject matter as described above. In addition Cass teaches method/apparatus/computer-readable memory, wherein the intensity values of the respective pixels in each of said second groups are changed as a result of the encoding of the data to produce first groups in the first image such that after the encoding, respective summations of the intensity values of the pixels in each of the respective first groups are equal to respective intensity values of respective corresponding pixels in the second image (Cass Fig. 6, and col. 15 lines 9-31).

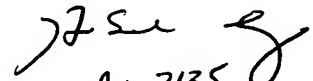
As per claim 21, both Shimisu and Cass teach all the subject matter as described above. In addition Shimisu teaches apparatus, wherein the encoder encodes the data into the image by changing all but at least one respective pixel in each of the groups of respectively identical pixels (Shimisu Fig. 2 and col. 4 lines 3-col. 5 lines 5).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eleni A Shiferaw whose telephone number is 571-272-3867. The examiner can normally be reached on Mon-Fri 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Eleni Shiferaw  
Art Unit 2136  
February 17, 2005

  
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